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Connectivity in and around Organizations: Waves, tensions and trade-offs

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Abstract

Connectivity has become the foundation for organizing as it increasingly underpins and defines the way we live and work. Notwithstanding all the advances in connectivity *within* organizations, there are even more pervasive changes *between* and *around* organizations. In a digital world, more and more of us are working anytime, anyplace, and companies deliver value by better connecting with customers and external partners within digital ecosystems. In this introduction to the Special Issue, we summarize four waves of connectivity – *globalization, socialization, personalization* and *datafication* – that combine to create opportunities and challenges for contemporary organizations. We then introduce the papers in the special issue and discuss their contributions to theory and practice. Finally, we draw upon currently emerging challenges to suggest enduring tensions and trade-offs for connectivity research in the future.

Keywords

connectivity, datafication, digital communication, globalization, remote work, waves

Introduction

Connectivity is incorporated into our day-to-day life from the moment we awake to the end of our day. From shared photos taken moments after birth to digitally extended funerals, we have come to accept and expect digital connections throughout our lives. We use our smartphones and other

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mobile devices to inform, entertain and guide us (literally) from one place to the next. We consume and create media, which have become 'social' through the interactivity afforded by the Internet. Understanding digital connectivity is central to our ability to understand human social behaviours. Moreover, connectivity has become the core infrastructure of globalization. Even as globalization comes under threat, it is difficult to imagine a world without pervasive connectivity.

Early connectivity studies initiated discussions of its attributes, dimensions and duality (Kolb, 2008), states of connectivity (Kolb, Caza, & Collins, 2012; Kolb, Collins, & Lind, 2008; Wajcman & Rose, 2011), paradoxes of proximity (Wilson, O'Leary, Metiu, & Jett, 2008) and autonomy (Mazmanian, Orlikowski, & Yates, 2013), as well as studies of connectivity in practice, including mobile phones (Dery, Kolb, & MacCormick, 2014; MacCormick, Dery, & Kolb, 2012) and enterprise social media (Leonardi, Huysman, & Steinfield, 2013). But much has changed in the realm of technical innovations, such as sensor technology, artificial intelligence, machine learning and robotics. And the number of ways in which organizations and societies around the globe have embraced and embedded digital communication has grown at astounding rates. We consequently felt the time was ripe for new conceptualizations and investigations into connectivity in and around organizations.

The call for papers for this special issue anticipated contributions reflecting advances in connective technologies, the uptake and pervasiveness of social media as it pertains to organizations and work, the volume and impact of data on organizational processes, and social issues associated with technology, such as equity, diversity and ethical dilemmas. We nonetheless underestimated the changes that would occur in those spheres since the call went out. In particular, as we introduce this special issue, we cannot ignore the profound historical context in which this collection is presented, namely the Covid-19 pandemic and its dramatic impact on organizational life and life in general. While we acknowledge the significant impact of this global health crisis on organizational connectivity, we are not able yet to fully account for the role that digital technologies have played to transform work during and after the crisis. We will leave that task for others. The papers in this special issue may nonetheless provide insights and lessons that help us re-imagine a post-Covid world.

In this introduction to the special issue, we begin with a brief description of four waves of connectivity that have reshaped the social and technical landscape in which we live and work. We then go on to describe and discuss the papers in this issue, including some of their contributions to our thinking. From there, we identify several tensions and trade-offs for future connectivity studies. Our intent is to stimulate interest in and attention to connectivity in and around organizations – and to set new waves of research in motion.

Waves of Connectivity

It is easy to take for granted the technological and social advances that have made near-constant connectivity possible. We would like to suggest that these changes can be seen as *waves* of connectivity that have successively enhanced and challenged human endeavours. We describe these waves briefly as context for the papers in this issue, and also to position and contextualize our discussions of the challenges we see for the future of connectivity. It is important to note that one wave does not strictly precede the next. Rather these waves are waxing and waning concurrently as they shape and are shaped by the people and technologies that determine their form (Raffinsoe, Mennicken, & Miller, 2019).

Following the social and scientific optimism of the 1960s and 1970s, a trickle of digital technology swelled into a flood with the advent of the personal computer, mobile phones, the Internet and the World Wide Web, which made the world seem 'flat' (Friedman, 2005) and distance was pronounced

'dead' (Cairncross, 2001). Humans could 'reach out' to humans almost anywhere in the world, making the visionary metaphor of a 'global village' (McLuhan & Powers, 1989) a reality. We call this era the *globalization wave of connectivity.* While the depth and volume of content was limited by current standards, it nonetheless proved the concept and the potential of reaching global colleagues, audiences and consumers. It has been called the 'gee whiz' era of the 'new economy' (Krugman, 1998) and is often associated with the dot.com boom of the 1990s and its subsequent crash around the turn of the twenty-first century. Niina Nurmi and Pam Hinds' paper in this issue reminds us of the ongoing and changing impact of globalization on work practices. While digital technologies have condensed geographies and reduced the challenges of staying connected across geographical spaces, we remain constrained by the unalterable impact of time zone differences. In their paper they warn that the inclusion made possible by being able to connect from anywhere may be marginalizing sectors of the workforce, particularly women, when expected to be able to connect anytime. This wave continues to gain momentum as people increasingly work in virtual teams.

The second wave can be described as the *socialization wave of connectivity*, which was ushered in with the rise of social media platforms, such as MySpace, Friendster and Facebook, followed by WeChat and others, which turned the Web as information source into the Internet of sharing and social exchange (Wellman & Milena, 1999). The original visions of building online communities flourished and the power of the collective was realized. As media became more and more 'social', users became 'co-creators', which unleashed a torrent of textual and, importantly, video material, which led to the subsequent rise of YouTube, Instagram, TikTok and other video sharing platforms. Subsequently, social media became the predominant platform for organizational communication (Leonardi et al., 2013), variations of which (e.g. Skype, FaceTime, Zoom, Teams) enable organizations to work online, whether by choice or necessity. Emmanuelle Vaast, in her paper in this issue, extends our conceptualization of online communities as single entities, and posits that they are often multiple and/or layered networks of sub-groups. She examines social networks of data scientists and explores how they allow actors to connect, disconnect and form sub-networks to create smaller, more supportive 'rooms' where people feel safer and a greater sense of belonging. In this way networks both extend connectivity and democratize it at the same time, allowing more marginalized participants to have a voice as well as a safe place of their own. Similarly, Comeau-Vallee and Langley unpack how social networks can both open communities of practice to include multiple voices, while also gating and curating places for occasions when specialization may add more to the conversation. While digital tools have supported and enhanced the socialization wave, it is the enacted agency of the actors as they interact that has unlocked the capabilities and power within these digital environments to create spaces that have meaning for both individuals and communities.

The smartphone heralded the third, and what could be called the *personalization wave of connectivity*. Mobile 'apps' (for 'application') brought the vast information and affordances of the Internet into a single handheld device that was more or less affordable for a growing number of the world's population. Providing email, calendars, news and social media, coupled with GPS (global positioning systems) as well as mobile banking, shopping and entertainment, smartphones evolved from 'nice-to-have' to 'must-have' status, not just for 'knowledge workers', but for every professional. With a smartphone, you've got 'the whole world in your hands'. Smartphones are intensely personal, but they also make it easy to bring your professional life with you anywhere you go, which can become problematic (Mazmanian et al., 2013; Turkle, 2011). Mobile personalized devices also enable data to be transmitted from the individual to organizations. GPS, useage, connections, networks and other data points all connect us in ways that form a digital data double of individuals. Gemma Newlands (2020) explores this in the context of surveillance and the risks of over-reliance on digital connectivity to paint a full picture of how, when and what employees are

doing. This idea is explored further in Ella Hafermalz and Kai Riemer's paper in this issue. They explore how nurses use simple technologies to become present with their patients, by drawing on their past embodied experiences to skilfully 'negotiate distance'. This implies that data and algorithms by themselves are not sufficient for building a personal connection with others who are geographically far away - new skills in interpersonal connectivity are also needed. Personalization is becoming more complex than we ever imagined and is a wave of connectivity that keeps gaining more momentum with time.

The fourth wave is *the datafication wave of connectivity*. From Castells' (1996) early conceptualization of society as a system of information flows, digitization and datafication are transforming organizational processes more than perhaps any force in history. The age of AI is both confronting and reassuring. Peter Fleming (2018) describes this era as 'bounded automation' as he posits that 'despite these waves of computerization, jobs have not disappeared', but rather are being re-imagined as people work in new ways and interact with the data and computational capabilities of robotics. Alaimo and Kallinokos (2020) develop this idea further as they paint a picture of organizations so tightly coupled with data order and objects that they are no longer distinct from the technologies they deploy. Organizations can also increasingly gather, store and analyse massive amounts of data on customers and employees. They can share or sell these data. They apply business analytics and algorithms to make sense of data in order to serve (or surveil) us better. Like any new wave, datafication does not swell on its own momentum alone. It has been made possible by the exponential advances in computational speed and storage capacity required by the expansive technological demands of globalization, socialization and personalization of information systems. Taken together, such forces reinforce each other and create digital capacity and content, but it is connectivity that powers the waves forward. Leornardi and Treem explore this further in their paper in this issue where they describe and discuss how digital connectivity affords rapid increases in the visibility of human behaviours such that we are forced to rethink what it means to be present (or not) in organizational life. In this way we are challenged to consider how connectivity unlocks the capabilities of data to create new organizational forms as well as behavioural changes (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007).

In this Issue

In our call for papers for this special issue we asked scholars to examine how the exponential growth in connectivity was changing organizing and organizations. We challenged researchers to develop new theoretical lenses and to consider the implications of connectivity research for practice. Each of the papers extends our understanding inherent in the four connectivity waves and suggests new challenges for the future. For some of our authors the digital capabilities are foregrounded in their discussions as critical shifts in the opportunities to enhance connectivity, while for others the technology is implicit and the behaviours surrounding connectivity are of more interest. It is the richness and diversity of these perspectives that frame the themes for future research.

First, Paul Leonardi and Jeffrey Treem (2020) propose a compelling new 'paradigm' for studying organizations in the age of digitization, datafication and digital connectivity. They define and develop the concept of 'behavior visibility' (Treem & Leonardi, 2012) and articulate the context, conditions and consequences associated with this lens on organizational behaviour. They help us understand how simple behaviours, such as creating a spreadsheet or writing a message to colleagues, are 'performative' behaviors that can be 'seen' by a multitude of intended and unintended audiences. Classic notions of impression management are still at play, but the until-now unfathomable level of connectivity make the visibility of behaviour more salient, relevant and potent as we

attempt to understand organizations in the digital age. Along with a comprehensive agenda for research, the authors identify several practical paradoxes of behaviour visibility in organizations.

Meanwhile, Ella Hafermalz and Kai Riemer (2020) suggest that it is quality, not quantity, that really matters in personal connectivity practices. Investigating remote medical care service providers, they discover that interpersonal connectivity can be effectively and efficiently established over low-tech media (i.e. voice telephone calls to a call centre) for a wide variety of health concerns and emergencies when service providers understand the health field (what to do) along with the context of the caller (who and where they are). Challenging conventional notions of media richness theories and volume-oriented 'states' of connectivity, they assert a novel and nuanced model of *interpersonal connectivity work* based on the intersecting dimensions of 'agentic' and 'empathetic' connectivity. They find that high-quality interpersonal connectivity is less about the richness of the medium and more about balancing freedom and control on the agentic dimension and being able to get close to patients through empathy, while keeping some professional distance.

In their paper on the interplay of inter- and intraorganizational boundary work in multidisciplinary teams, Comeau-Vallee and Langley (2020) remind us that 'collaborative boundary work' inherently involves some form of social connectivity. As these authors suggest, 'boundaries do not exist in an essentialist way, but emerge from interactions, supported by the efforts of institutions, organizations and individuals' (Abbott (1995), cited in Comeau-Vallee and Langley, this issue).' Comeau-Vallee and Langley observe that no matter how much we advocate flexibility and collaboration in organizations, such efforts are seldom conducted on an even playing field. They also present the original and paradoxical finding that maintaining distinctive professional boundaries can actually enhance intra-group collaboration, which represents an important contribution to the literature on team collaboration. While one of the overarching outcomes of connectivity is breaking down barriers and bridging boundaries, there is also value in maintaining boundaries. 'Good fences make good neighbors', as the old adage goes. Strong professional identities do not necessarily lead to dysfunction. They can actually allow us to work effectively with other professional groups.

Spanning boundaries is also a theme in Emmanuelle Vaast's paper in this issue, entitled 'A seat at the table and a room of their own'. In her paper, Vaast offers new metaphors for enterprise social media and presents a paradox of connects and disconnects among non-binary gendered data scientists, wherein online social networks provide minority members with a 'seat at the table' to represent themselves within a majority context. However, at the same time, participants in her study felt a need to create virtual 'rooms of their own' as safe, secure and supportive spaces for themselves. This work suggests the growing importance of the role that members and leaders of organizations can and often do play in curating digital spaces. It also reflects the heightened awareness of what it means to be safe at work, including safety from online bullying and harassment. As the world becomes more connected, it must also become significantly more inclusive. The moral obligations of organizations to support openness and fairness have always mattered, but never more so than now.

Last, but not least, the challenges of professional work in an age of global connectivity are articulated by Niina Nurmi and Pam Hinds in their study of global professionals who encounter new structures and practices, many of which explicitly or implicitly include connective availability as a job requirement. As such, constant connectivity can be seen as an emerging threshold (or barrier) to employment and/or paths to promotion. This phenomenon is most particularly problematic for women, who find maintaining inter-time zone connectivity a particularly challenging balancing act between professional performance and family commitments. While technology may help make work flexible, social conventions sometimes do not. As virtual teamwork becomes increasingly the norm, the requirement to be available online anytime anywhere may become another invisible

barrier to success for professionals who have competing demands on their time. Moreover, the tacit expectation of near-constant availability enabled by ubiquitous connectivity is not gender-neutral; it affects women more than men.

Future research

The articles in this special issue will hopefully raise critical questions that will inspire scholars to explore new questions around how connectivity shapes and is shaped by organizations. There are numerous questions beyond the topics addressed here and we look forward to seeing a wide range of new questions and methodologies applied to the nascent field of connectivity studies. Regardless of the specific question being asked, we would like to highlight several enduring tensions and trade-offs associated with connectivity in and around organizations. These tensions, in differing forms and to varying extents, are evident across all of the papers in this special issue. Moreover, these tensions and trade-offs are becoming increasingly problematic in an era where the mass collection, storage, analysis and manipulation of data pervades every industry and every organizational process.

Always 'on' versus the right to disconnect

In order to be fully connected, we need to sometimes disconnect (MacCormick et al., 2012). Zuboff encourages us to defend the elemental 'right to sanctuary'. As she puts it,

> The human need for a space of inviolable refuge has persisted in civilized societies from ancient times but is now under attack as surveillance capital creates a world of 'no exit' with profound implications for the human future at this new frontier of power. (Zuboff, 2019, p. 21)

While our 'digital exhaust' makes it difficult to fully disconnect from the digital world (Leonardi, 2020), we must strive to remain able to reasonably disconnect our attention from the constant stream of distractions available to us in the digital universe in order to reconnect to the persons, place and present time in which we are living. Powerful as having an online presence may be, 'presence' with others in face-to-face environments will remain a crucial management and leadership attribute for the foreseeable future. Switching off our devices in order to switch on to what's going on around us is a skill that will reap rewards. However, personal agency in a connected world is bounded by the actions of the collective (Barley, Meyerson, & Grodal, 2011). Leaders will need to hone capabilities to support and reward employee 'revitalizing' behaviours as more and more of our work moves online.

Freedom versus safety

While surveillance and monitoring offer some reasonable benefits to individuals and collectives, they also impinge on our freedom and independence. Our agency or 'free will' is a sacred right to many, but can lead to intentional resistance (Newlands, 2020) and ultimately can make the world a dangerous place. The debate about who decides how much digital surveillance is 'good for you' is likely to continue, especially in relation to multifaceted and other new forms of surveillance (Hansen & Weiskopf, 2019). We have witnessed societies that favour freedom over all else, but in doing so have sacrificed the ability to act collectively with a common purpose to keep individuals and sub-groups feeling safe. Our understanding of surveillance will become increasingly important as digital technologies provide opportunities for ubiquitous observation. Working with these

capabilities will require us to advance new language and understanding of the philosophical and practical tensions between maintaining individual freedom while assuring the privacy and safety of citizens and employees.

Health versus knowledge sharing

Organizations need knowledge, but they also need healthy workers. Covid-19 has instantaneously transformed socially distanced work from home into the new norm. However, in the long term, working remotely might forego essential organizational dynamics since developing and sharing knowledge normally requires some physical proximity. Though, at first glance, knowledge work can be done anywhere, research has shown that knowledge work is largely emergent, situated, embodied and collectively enacted (Blackler, 1995; J. S. Brown & Duguid, 2000). It is strengthened by strong social ties, which are harder to create and maintain if social distancing is enforced for prolonged periods (Wenger, 1998). Digital technology may support knowledge work, but its efficacy highly depends on factors such as the level of interdependence in the work, the extent to which people share the same practice and are socially embedded (Agterberg, van den Hoof, Huysman, & Soekijad, 2010; D. Brown, 1997). Consequently, assuming that knowledge workers can simply work in a socially distanced manner might have undesired consequences for the development, creation and application of knowledge.

Digital versus cultural programming

With digital dependence, do humans rely less on other humans to navigate and make sense of the world? For example, we use our smartphones to find our way around, and seldom if ever ask a stranger for directions. What is the cultural loss incurred when we reduce human-to-human interdependence? Does digitization and datafication necessarily mean dehumanization? Algorithms have proven to undermine trust in social institutions, including governments and corporations. Where can cultural conversations take place without the fear and real possibility of digital manipulation? The technologies that enable us to connect with others often lead to self-centred if not antisocial behaviours. Do they actually reduce rather than enhance social capital (Huysman & Wulf, 2004)? As machines become more ‘social’, we run the risk of becoming more like machines (Harari, 2017). This occurs on two levels.

First, machines, including the software that we use to operate them, require us (in their structure), tempt us (with addictive designs) and reinforce us (with ‘likes’) to behave like machines (Orlikowski, 1992; Orlikowski & Scott, 2008). Second, as we increasingly use machines to connect us to information about all aspects of life, we reduce our reliance on and connections with non-machine data, such as subtle social cues from those around us, the natural world and our own embodied self. Schwarzkopf (2019) warns that an overreliance on data can create cultures of sacred and non-contestable ‘truths’ that foster ignorance rather than the open-minded, creative cultures that we seek to support in a digital world. A passive response to understanding and managing digital analytics places us at risk of being hyper-connected to technology, while losing the connection with our own humanity.

Individualism versus collectivism

The world is more connected than ever, and paradoxically more disconnected than ever. On the one hand, we are building bridges across the digital divide and uniting individuals and online communities from around the globe. On the other hand, online networks can be manipulated to undermine

democratic processes and fragment our sense of civic collectivism and unity. We now have the tools to unite our human communication, if not our consciousness. We should strive for a future that is not just more connected but is also more inclusive of all kinds of people from all parts of the globe and from all walks of life.

Civilization cannot survive without connectivity, but connectivity alone cannot produce a functioning society. That still requires human empathy, thoughtfulness and compassion. One of the outcomes of the Covid crisis has been at least equal measures of rugged individualism and collective action. Indeed, the inspiring actions of individuals were often captured and shared by others on social media, thereby representing and celebrating both sides of human nature.

Local versus global power

A connected world must include the whole world, but also acknowledge differences within that world. Digital divides still exist, not just in terms of access to the Internet, but also when it comes to the equality of power in the digital world. 'Winner-take-all economics' (Brynjolfsson & McAfee, 2014) have seen the commercial power of the digital age become concentrated in the hands of a few global corporations. This means that the power of connectivity is shifting from users to providers and regulators (or the lack thereof). Privileged private providers often keep in step with their host country's policy agenda, but sometimes they don't. In other cases, governments seek to regulate or sanction the actions of global corporations, with varying degrees of success. As such, connectivity is likely to continue to be a contested political battleground. Global technical consolidation also runs the risk of forcing global social consolidation without regard for the cultural diversity and social needs of nations and regions. Therefore, the tension between what is universally 'good' for everyone and what is desirable for a particular local setting and cultural context is likely to be an ongoing, if not accelerated and perhaps amplified, debate.

Conclusion

We assembled this special issue during the initial surge of the Covid pandemic. It was a time when 'connectivity in and around organizations' came into sharp focus, not just for us as scholars of technology, but for much of the world's population. In particular, millions went into lockdown or were encouraged to work from home. However, while the pandemic has no doubt accelerated evolving trends and patterns, those trends and patterns were already in motion pre-Covid. Work was already moving into our homes. Automation has been building our cars and flying our planes for decades. Organizations were already becoming digitized and datafied, and data were beginning to make decisions in conjunction with (or instead of) managerial experience and wisdom. Curating our online presence has been an evolving practice from social media posts to our LinkedIn profiles to how we look on Zoom.

For some time, we have understood the social construction of reality (Berger & Luckmann, 1967). Now, we have reached an age where social actors not only construct alternative explanations of observed phenomena, but actively 'weaponize' information in order to destroy others' perception of reality. As such, we are living in an era increasingly characterized by what could be called the *social destruction of reality*. Science is being denied legitimacy in many camps, even as the world desperately needs solutions to extensive, if not existential, problems (Fotaki, Altman, & Koning, 2020). We cannot agree if there is actually a problem to be solved, let alone whose truth will prevail in addressing it. While gossip is nothing new, organizations may increasingly struggle to establish and maintain credibility in a world where both information and misinformation abound

in mass quantities. In a world swimming in data, the principles of scientific inquiry and thoughtful uncertainty are under threat from a dangerous cocktail of ignorance and arrogance.

As data become the lifeblood of organizations, they need to support lives worth living. Thanks to digital tools, working anytime anywhere has become not just possible, but a reality for many. But the tools that enable working anytime anywhere can lead to higher, unhealthy expectations of professionals. Whether we like it or not, organizations are increasingly expected not just to keep workers safe, but to provide for their wellbeing, no matter when and where they are working. We have to keep asking, have our lives become better? Are we healthier than we were in the past? If not, how can we use data and digital tools to enhance the lives of workers at all levels of the organization?

Some argue that when it comes to organizing, communication is everything (Cooren, Kuhn, Cornelissen, & Clark, 2011; Putnam & Nicotera, 2009). While that may be so, we see connectivity as underpinning so much of personal and organizational activity and behaviour that it deserves more attention. We have identified four overlapping waves of connectivity: *globalization, socialization, personalization* and *datafication.* Each of these waves has profoundly shaped and continues to influence the flux and flow of our digital lives. Looking toward the future, there are trade-offs and tensions that will continue to make connectivity as dynamic as it is pervasive.

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